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Daniels County
(Mont.). Technical
Action Panel
An appraisal of
potential outdoor
recreational
developments,

OUTDOOR RECREATIONAL DEVELOPMENTS

711.558
M26a10

AN APPRAISAL OF POTENTIAL

OUTDOOR RECREATIONAL DEVELOPMENTS

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An appraisal of potential outdoor recrea



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PREFACE

The following report has been compiled as a result of appraising the potential for twelve kinds of outdoor recreation developments in Daniels County, Montana. This follows an inventory of the existing recreation developments, public and private, made earlier in 1968.

The information contained herein will be of help to groups and individuals in pointing out the potential for certain types of recreation enterprises and areas in the county. Further, it may serve as a guide in evaluating the recreation possibilities for developing specific locations within the county. However, this report considers the county as a unit, and no attempt has been made to appraise individual sites for recreation development.

This report was made possible through the cooperative efforts of many organizations and was prepared by the following Members of the Daniels County Technical Action Panel, John Higgins, Agricultural Stabilization and Conservation Service; E. J. Sprague, Soil Conservation Service; George Hove, Farmers Home Administration; and Lee Rovig, Extension Service.

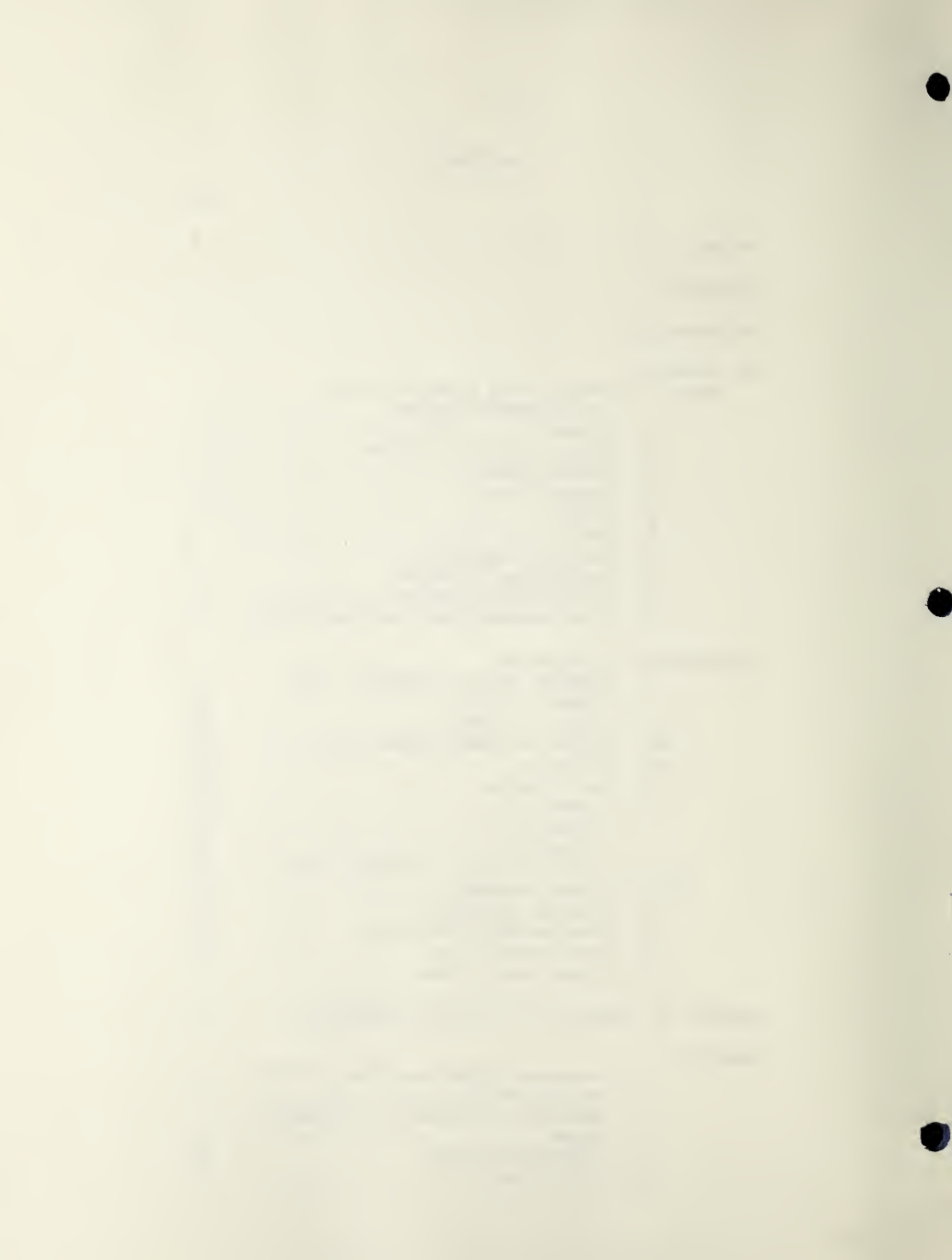
Special appreciation is given to Bob Richardson, Soil Conservation Service; Herman Uhlrich, Soil Conservation Service; Bob Needham, Montana State Fish and Game.

Printing and distribution of this report was made possible through the cooperative effort of the State Technical Action Panel.

Appreciation is expressed to all others who have helped in the compilation of this report.

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INTRODUCTION

Appraising the potentials for outdoor recreation is an essential step in planning to meet recreation needs. Opportunities for further development of resources for recreational uses in Daniels County were recently examined with the goal of stimulating countywide growth. This appraisal involved a consideration of more than natural resources since development potential also depends upon people and facilities necessary for development.

The potential for twelve kinds of recreational developments were examined separately. Each had different criteria for evaluation depending upon the requirements of the activities involved. The objective--to make these appraisals without long and costly surveys--was achieved by a group familiar with the county and with the requirements of the different recreational developments. Information was obtained from various public and private sources. These included data on resources such as water, soils, scenic areas, natural areas; also, influencing elements such as climate, highways, land use and populations of people. The group followed a procedure, "Guide to Making Appraisals of Potentials for Outdoor Recreation Developments" prepared by the U. S. Department of Agriculture. This was essentially a group judgment process backed up by factual information. This procedure is described more fully as each kind of potential is appraised.

The end result of this appraisal process is a group of conclusions regarding the potentials for future development of the important kinds of recreation areas and enterprises in Daniels County. In addition to the general purpose of providing information needed for effective development of natural resources for outdoor recreation, these appraisals have other uses, including:

- Improving the long range program of the Daniels County Soil and Water Conservation District;

- Information for publicizing and promoting outdoor recreation in the county;

- Information useful for local planning by county governments, planning board and civic groups;

- Information for developing regional and State outdoor recreation plans;

Identification of specific project proposals for public recreation areas;

Serves as guidelines to more efficient and profitable use of certain natural resources and thereby improve the economic status of individual landowners and the community;

Help meet the increasing demand of people for wholesome outdoor recreation.

Table 1. Weather from Selected Local and Distant Stations

	Stations	
	Culbertson, Circle, Glendive, Glasgow	Billings, Great Falls, Havre
Percent Possible Sunshine		
June		65%
July		62%
August		79%
September		78%
		75%
		67%
Mean Temperatures (F.)		
January	9.6	22.9
February	13.7	22.7
March	17.0	24.6
April	25.0	31.1
May	30.0	38.5
June	42.8	46.2
July	43.2	44.3
August	54.7	53.8
September	58.2	55.7
October	66.0	64.0
November	72.2	60.7
December	74.9	69.6
	68.1	71.3
	67.7	71.0
	67.0	68.0
	57.3	56.9
	45.7	49.2
	48.8	48.1
	32.3	35.8
	29.6	35.2
	16.9	27.2
	19.7	26.5
No. of Days Between First and Last 16° Day	190	228
	218	220
	201	222
Rainfall (inches)		
June	3.47	2.61
July	1.83	1.14
August	1.47	.88
September	1.09	1.32
June-Spet-	7.86	5.95
Total	7.17	6.95
Annual Snowfall - Inches	26.6	53.7
	25.7	53.5
		36.9

1940

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1945

1946

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1948

KEY ELEMENTS

Ten key elements with several subdivisions were used to evaluate potentials for outdoor recreation in Daniels County.

Each of these key elements is discussed below as used in these appraisals.

A. Climate

Climate, as it affects various recreation activities and enterprises, can be either a contributing element or limiting factor.

Seasonal temperatures, precipitation patterns, sunshine and snowfall were considered. Climate was appraised, in part, relative to that where the recreationists are expected to come from.

Official weather station information was used from four locations in the surrounding counties as well as from three stations at cities up to 300 or more miles away where potential vacationing clientele reside. These are shown in Table 1.

B. Scenery and Scenic Areas

Attractiveness of the general surroundings affects the potential for many kinds of outdoor recreation. The natural qualities of the environment--topography, vegetation, wildlife, geologic formations--are the major elements. Manmade improvements or destruction--water impoundments, landscaping, gully erosion--may be important. For some purposes scenery was appraised relative to that of the areas where the majority of the recreationists come from.

C. Natural Areas

Areas of distinctive natural environment that are not badly influenced by urbanization, farming, mining, lumbering or other human changes are important for several recreation activities. The natural areas in Sheridan County have insufficient aesthetic and cultural interest to attract people.

D. Historic Areas

Sites where important events of history took place or historic structures and old mining towns offer opportunities for either public or private recreation areas.

E. Soils

Soil conditions are of significance primarily in specific site planning. Soils also bear a vital secondary relationship to many kinds of recreation developments which will need new water sources. Clay soils present problems for using septic tanks, some the loams are difficult for pond building and the shallow soils limit opportunities for cropping and vegetative development.

F. Water

Existing Water Areas

An inventory of existing water areas in the county was made and is included a Appendix A. Because of the special significance of water areas to outdoor recreation, all significant water areas were included whether presently developed for recreation, partly developed or undeveloped. Streams, lakes and larger ponds with potential use for public outdoor recreation were included.

Water Impoundment Sites

Undeveloped sites having characteristics feasible for impounding water represent an important potential for several kinds of recreational developments. An inventory of these sites is listed in Appendix B. General conditions of soils, geology and watershed hydrology were considered in identifying these potential impoundment sites.

G. Fish and Wildlife

Habitat

Food, cover, and water are essential elements of wildlife habitat which must be available to sustain populations of wildlife. The quality and quantity of this habitat is a result of the type and intensity of land use which in turn is, in part, a reflection of soil conditions. Upland game

(pheasants, grouse and partridge), big game (deer and antelope) and waterfowl (Ducks, geese) require different kinds of habitat. The suitability and quality of lakes ponds and streams for fish depends on such factors as water depth, temperature, degree of pollution and steadiness of flow.

While this element has its prime significance in relation to hunting areas, fishing waters and natural areas, it also has importance for Vacation Cabins, Cottages and Homesites, Camping Grounds and Vacation Farms.

H. Populations of People

Population - Size and Distribution

Populations of potential users are important to all kinds of recreation development potentials. Population figures for the county, adjacent counties and selected distant urban populations up to 300 or more miles away were considered. The populations of urban centers were used in relation to their distances from Daniels County and the kinds of recreation developments they might use. Day-use activities are largely limited to the Local Area of Influence, week-end trip activities to the closer Selected Distant Urban Centers - Great Falls, Billings and Havre.

I. Proximity and Access

The importance of the distance of the recreation area from its source of clientele varies by degree depending upon the kind of development. Proximity for purposes of outdoor recreation is almost wholly measured by means of the public road system. For some kinds of recreation areas, the additional element of access is involved. Daniels County has an adequate road system and almost complete access to all areas for all types of recreation. (It has 800 miles of County roads in its 1443 square miles. It also has 98 miles of major tourist routes.)

J. Rural Ownership and Land Use Pattern

The ownership and land use pattern of rural areas has particular bearing on the potentials for developing Vacation Farms or Ranches and Hunting Areas.

The potential for vacation farms or ranches depends in part upon the existence of farms or ranches having substantial farmsteads or ranch headquarters and having farming or ranching operations that are of interest to urban people. Size of property is also important but may be provided on adjacent public or private land as well as on the farm or ranch property.

The importance of farm ownership pattern for hunting area development may lie in the feasibility of developing hunting cooperatives or in having large enough properties to organize a hunting enterprise.

This element may also occasionally have some relevance to other types of areas, such as Natural, Scenic and Historic Areas.

I. VACATION CABINS, COTTAGES & HOME SITES

Vacation Cabins, Cottages and Home Sites represent rural living space close to various recreation activities. This includes living quarters developed to rent to clients, vacation homes built to sell, and organized group "Camps" that use permanent buildings.

Climate as an element applied here relates to its desirability for summer vacationing purposes. It was judged in relation to the climate of surrounding areas. Favorable aspects of Daniels County are: Pleasant daytime temperatures, plenty of sunshine, and cool nights.

It was felt by the committee that Scenery was not as good in Daniels County as in some surrounding areas. Natural Areas are an interesting part of the drawing power of their locality for tourist and other vacationing. The Geologic area east of Flaxville has limited potential for those interested in Geology.

Soil Characteristics such as depth, permeability, texture and slope are very good in Daniels County. Adequate water supplies are available in most areas where building might be feasible.

Daniels County also has a number of water impoundment sites and a potential for more. Many of the impoundments are not ideal for home sites. However, some of the potential sites could adequately serve as recreation areas for home sites. For more information refer to Appendix B.

Daniels County has no existing water areas which are large enough to make adequate recreational home site areas. See Water Sports Areas and Appendix A.



II. CAMPING GROUNDS

Daniels County offers a medium potential for campgrounds. In this study the key elements used to determine a potential were climate, scenery, natural areas, soils, water areas and access.

When scenery is discussed it is usually thought of as mountains and trees. In this area we do not have that type of scenery, but we do have areas such as are found in the Navajo area that offer a natural beauty created by erosion showing the hills in many varied formations.

We also have some water impoundment sites such as the Whitetail Reservoir. More use would be made of a transient type of campground than a vacation site. There would be no potential for pack trips.

III. PICNIC AND FIELD SPORTS AREAS

There are no concentrated areas of population in the area to utilize this type of enterprise. The potential for game, play and target areas is low. The potential for bicycling is non-existent. Picnicking is rated low. Most local people already have a favorite spot where they prefer to picnic in the area.



IV. FISHING

The fishing in Daniels County is part of the over-all recreation although it is rather limited as to species and area.

There are numerous trout ponds under private ownership that allow public access. This is an agreement with the State, and in turn for this public access, the State Fish and Game Department plants trout and some warm water fish in these ponds. The warm water fish planted are usually Northern pike and large mouth bass.

At Whitetail a pond is stocked to trout and a public recreation area is being developed adjacent to the dam.

Killenbeck Pond northwest of Four Butte has been stocked in the past to Northern pike. Attempts are underway to re-establish this planting.

All of these ponds have to be planted to maintain them as all are prone to lose fish during the winter months. Sometimes the loss is 100% of the fish in the ponds.

Fishing pressure is light to heavy on all species.



V. GOLF COURSES

Golfing activities have a low potential because of the limited population and the proximity of cities.

Scobey has had a fine sand green golf course for 41 years. Family rates are nominal and out-of-town guests may golf for green fees.

The support for this course is mostly local and does not attract large numbers of people from outside the immediate area on a regular basis. The annual tournament has golfers from Canada and the surrounding counties.

The club house has running water and has been remodeled recently. The course has carried out a tree planting program for the last 3 years. When the tree planting is completed, the course will be landscaped with trees and shrubs.

Driving ranges and miniature golf were not rated due to the low population in the area.

VI. HUNTING

Deer

We have both Mule Deer and whitetail deer in Daniels County. The whitetail deer provide the bulk of the hunting.

The deer hunting has had its ups and downs for the past decade. Deer populations can be maintained at a medium level by a two-week season. The removal of a large amount of ground in the Soil Bank last year will surely have an effect on the deer population of Daniels County.

Antelope

The antelope are in about the same situation as the deer. Their numbers are somewhat limited.

Hunting pressure is light to moderate on deer.

UPLAND BIRDS

Daniels County has some of the best upland bird hunting in the state.

The sharp-tailed grouse is not too plentiful, but provides some excellent hunting. The ring-necked pheasant has its ups and downs in populations, but still furnishes a lot of shotgun sport.

Gray partridge (Hungarian) are limited to some areas of the County and add to the bird hunting.

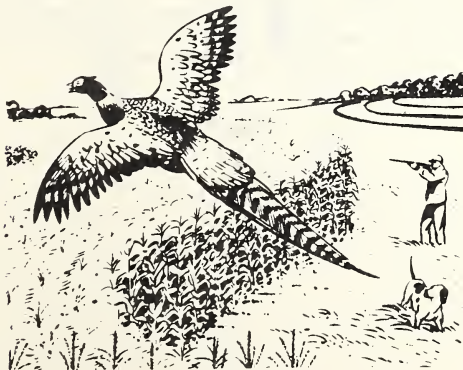
WATERFOWL

Daniels County provides a small amount of waterfowl hunting. All kinds of ducks - Mallard, Pintail, redhead and canvass-backs - abound as well as several other species.

Goose hunting is also fair for both Canadian and whitefronted geese.

Although Daniels County raises a fair quantity of ducks and geese, sometimes the season is cut short by an early freeze and the birds move south.

Hunting pressure is moderate to light on all birds in the county.



VII. NATURAL, SCENIC AND HISTORIC AREAS

All of these are rated low in the county. The natural and scenic sites are much like the rest of northeastern Montana and western North Dakota.

During the past 3 years there has been considerable work done to develop a museum site just west of Scohey. There are now some 17 buildings on the site. Each year a threshing bee and a 4-day celebration is held at the site. The crowds are large on those days but the rest of the year there are very few visitors.

VIII. RIDING STABLES

This item was not rated. There is no population available to use such a facility.

IX. SHOOTING PRESERVES

This item was not rated. There is too much open land for hunting and too little hunting pressure to make it profitable.

XI. VACATION FARMS AND RANCHES

This item was not rated. We do not have the scenery that is available in other parts of the state. The transportation is not available by commercial carriers for people to get to this area. The only way is by private car.

XI. WATER SPORTS AREAS

Areas of land and water devoted primarily to swimming, sun bathing, boating, water skiing and skin diving are among the most popular for outdoor recreation today.

Daniels County rates low in potential as a water sports area. The proximity to cities with large populations and the limited number of lakes and impoundment sites are factors which limit the potential.

The short summer season with cool nights limits swimming and water skiing to a two or three month period. The boating season is restricted by severe winters.

While Scenery is not one of the more important elements affecting water sports, it is still important. Scenery in the county rates relatively low.

Existing water areas is the most important element in relation to immediate potential. Existing waters in the county were inventoried to appraise development potential for new water sports areas. There are no natural lakes in the county. Most of the man made ponds are too small for good boating.

For potential water impoundment sites refer to Appendix B.



XII. WINTER SPORTS AREAS

This item was not rated. The terrain is not suitable for skiing. With the increasing use of the snowmobile more people are using the out-of-doors in the winter. These are generally local people who may at times travel 100 miles to a race on Sunday afternoon but this is not a commercial enterprise.



SUMMARY OF APPRAISALS OF POTENTIALS FOR OUTDOOR RECREATION

DATE OF APPRAISAL 1969

IN DANIELS

COUNTY Daniels County

SOIL (& WATER) CONSERVATION DISTRICT OF

Montana

STATE

SCORES FOR KEY ELEMENTS (RATINGS X MULTIPLIER)																	TOTAL SCORE	APPRAISAL (ADJECTIVE)
KINDS OF RECREATION DEVELOPMENTS																		
	CLIMATE	SCENERY	NATURAL AREAS	HISTORIC AREAS	WATER ARS.			WLD- LIFE	POPULA- PEOPLE		PROX. & ACCESS			LAND USE PATTERN				
					EXISTING	IMPOUNDMENT SITES	HABITAT		POPULATIONS	SIZE & DISTRIBUTION	AGE & OCCUPATION	INCOME LEVELS	PROXIMITY		ACCESS	TOURIST ROUTES		
I. VACATION CABINS, COTTAGES, & HOMESITES	-	-	-	XXX	8	1	-	XXX	XXX	-	XXX	-	-	XXX	XXX	---	Not Rated	
II. CAMPING	14	6	8	XXX	8	6	12	XXX	XXX	XXX	XXX	5	XXX	XXX	XXX	---	Medium	
-VACATION SITE	-	-	8	XXX	XXX	-	-	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	---	Not Rated	
-PACK TRIP	-	-	-	XXX	XXX	-	-	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	---	Medium	
-TRANSIENT	7	3	XXX	XXX	8	XXX	6	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	---	Low	
III. PICNIC & SPORTS AREAS	9	XXX	XXX	XXX	9	XXX	XXX	XXX	XXX	-	-	-	-	8	XXX	---	Not Rated	
-GAME, PLAY, TARGET AREAS	-	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	-	-	-	-	XXX	XXX	---	Medium	
-BICYCLING	9	6	XXX	XXX	8	6	8	XXX	XXX	XXX	XXX	-	-	XXX	XXX	---	Low	
-PICNICKING	9	6	XXX	XXX	XXX	11	11	XXX	11	-	XXX	XXX	-	7	XXX	---	Medium	
-WARM WATERS	6	XXX	XXX	XXX	XXX	15	14	XXX	14	XXX	-	XXX	XXX	XXX	XXX	---	Low	
-COLD WATERS	6	XXX	XXX	XXX	XXX	15	14	XXX	14	XXX	-	XXX	XXX	XXX	XXX	---	Medium	
V. GOLF COURSES	XXX	8	XXX	XXX	8	XXX	XXX	XXX	XXX	-	-	-	-	XXX	XXX	---	Low	
-STANDARD & PAR-3	XXX	8	XXX	XXX	XXX	8	XXX	XXX	XXX	-	-	-	-	XXX	XXX	---	Not Rated	
-MINIATURE & DRIVING RANGES	XXX	8	XXX	XXX	XXX	8	XXX	XXX	XXX	-	-	-	-	XXX	XXX	---	Medium	
VI. HUNTING AREAS	9	XXX	XXX	XXX	9	XXX	XXX	25	21	-	XXX	XXX	XXX	XXX	3	---	Medium	
-SMALL GAME	9	XXX	XXX	XXX	9	XXX	XXX	20	12	-	XXX	XXX	XXX	XXX	XXX	---	Medium	
-BIG GAME	9	XXX	XXX	XXX	9	XXX	XXX	35	21	-	XXX	XXX	XXX	XXX	XXX	---	Medium	
-WATERFOWL	9	XXX	XXX	XXX	9	XXX	XXX	35	21	-	XXX	XXX	XXX	XXX	XXX	---	Low	
VII. NATURAL, SCENIC, AND HISTORIC AREAS	XXX	8	12	XXX	XXX	XXX	XXX	XXX	1	-	XXX	XXX	1	5	1	---	Low	
-NATURAL AREAS	XXX	10	8	XXX	XXX	XXX	XXX	XXX	XXX	-	XXX	XXX	1	5	1	---	Low	
-SCENIC AREAS	XXX	10	8	XXX	XXX	XXX	XXX	XXX	XXX	-	XXX	XXX	1	5	1	---	Low	
-HISTORIC AREAS	XXX	XXX	XXX	25	XXX	XXX	XXX	XXX	XXX	-	XXX	XXX	1	5	1	---	Low	
VIII. RIDING STABLES	-	XXX	-	XXX	XXX	XXX	XXX	XXX	XXX	-	-	-	-	XXX	XXX	---	Not Rated	
IX. SHOOTING PRESERVES	-	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	-	-	-	-	XXX	XXX	---	Not Rated	
X. VACATION FARMS AND RANCHES	-	-	-	XXX	XXX	-	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	---	Not Rated	
-FARMS	-	-	-	XXX	XXX	-	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	---	Not Rated	
-RANCHES	-	-	-	XXX	XXX	-	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	---	Not Rated	
XI. WATER SPORTS AREAS	-	-	XXX	XXX	XXX	-	-	XXX	XXX	-	-	-	-	XXX	XXX	---	Not Rated	
XII. WINTER SPORTS AREAS	-	-	XXX	XXX	XXX	-	-	XXX	XXX	-	-	-	-	XXX	XXX	---	Not Rated	
A. B. C. D. E. F. I. J. K.	A.	B.	C.	D.	E.	F.	I.	J.	K.	H.	2	4	3	I.	J.	K.		



APPENDIX A

INVENTORY OF EXISTING LAKES, PONDS AND RESERVOIRS

Name of Water	Location	Size (Area or Length)	Description of Water	Present Use
Whitetail Reservoir Fish Pond	Just South of Whitetail	18 Surface Acres 12' deep.	Snow melt and rain runoff.	Trout fishing and picnic area, wildlife area.
Killenbeck Reservoir Fish Pond	Sec. 20, T36 N, R46 E.	30 Surface Acres 13' deep	Snow melt and rain runoff.	Being restocked to Pike, Wildlife Area.
Hatfield Fish Pond	Sec. 17, T35 N, R51 E	8 surface Acres 17' deep	Snow melt and rain runoff.	Trout fishing and wildlife area.
Chabot Fish Pond	Sec. 23, T36 N, R47 E	7 Surface Acres 16' deep	Snow melt and rain runoff.	Trout fishing and wildlife area.
Danelson Fish Pond	Sec. 23, T34 N, R49 E.	7 Surface Acres 17' deep	Snow melt and rain runoff, plus flood control.	Stock water and trout fishing.
Jacobson Wildlife Pond	Sec. 24, T33N, R50E.	23 Surface Acres 6' deep.	Snow melt and rain runoff, plus flood control.	Wildlife area, duck and geese, etc.
Jensen Wildlife Pond	Sec. 13, T33 N, R48 E.	6 Surface Acres 12' deep.	Snow melt and rain runoff.	Wildlife area, duck, geese, etc.
Edland Wildlife Pond	Sec. 20, T35 N, R45 E.	2 $\frac{1}{2}$ Surface Acres 13' deep	Snow melt and rain runoff.	Wildlife area, duck, geese, etc.

Name of Water	Location	Size (Area or Length)	Description of Water	Present Use
Leftsgaard Fish Pond	Sec. 17, T37 N, R43 E	4½ Surface Acres 16' deep	Snow melt and rain runoff.	Wildlife area, trout fishing, stock water.
Higgins - Tryon Wildlife Pond	Sec. 27, T34 N, R50 E	6 Surface Acres 14' deep	Snow melt and rain runoff, plus flood control.	Wildlife area, ducks, geese, etc.

APPENDIX B
INVENTORY OF POTENTIAL IMPOUNDMENT SITES

Identity of Site		Location	Estimate Size Source & Condition of Water				Present Use	Purpose
Name	Watershed		Area Acres	Approx. Depth	Drainage Area (Acres)	Flow		
Eagles Nest	Navajo Creek	Sec. 15 & 16, T35 N, R51 E	100	30'	19,200	Snow and rain-fall runoff. Good water.	Rangeland	Irrigated Recreation Wildlife.
Manternach Coulee	Manternach Coulee	Sec. 34, T35 N, R48 E	80	30-40'	21,120	Snow and rain-fall runoff. Good water.	Rangeland	Irrigated Recreation Wildlife.



R.43E.

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LEGEND

AREAS DOMINATED BY SOILS WITH LOAM AND CLAY LOAM SURFACES AND CLAY LOAM SUBSOILS

1. Williams Association: Deep, well drained soils, 14 to 24 inches deep to lime, with dark loamy surfaces and clay loam subsoils on nearly level to strongly sloping, glacial till uplands.
2. Williams-Hillon Association: Well drained, deep, dark colored soils with loamy surfaces and clay loam subsoils and light colored, calcareous, clay loam soils less than 14 inches deep to partly weathered, clay loam glacial till. They occur on nearly level to strongly undulating, glacial till uplands.
3. Hillon-Bowbells Association: Well drained, light colored, calcareous, loam and clay loam soils less than 14 inches deep to partly weathered, clay loam glacial till and dark colored soils with thick surface layers and clay loam subsoils more than 40 inches deep on moderately steep and steep complex slopes of glacial till uplands.
4. Fernuf-Williams-Hillon Association: Well drained, deep, dark colored soils with loam surface layers and clay loam subsoils and calcareous, clay loam soils less than 14 inches deep over partly weathered glacial till. This association occurs on moderately sloping glacial till and on terraces and fans.
5. Fernuf-Farland-Savage Association: Well drained, deep, dark colored soils with loam to silty clay surface layers and clay loam and silty clay subsoils with moderate salinity in poorly drained areas. These soils are found on level to gently sloping fans and terraces.

AREAS DOMINATED BY SOILS WITH SANDY LOAM TO SAND SURFACES AND SANDY CLAY LOAM TO SAND SUBSOILS

6. Dooley-Parshall-Lihen Association: Well drained, deep soils with dark colored, sandy loam and loamy sand surface layers and sandy clay loam to loamy sand subsoils on nearly level to strongly undulating uplands.
7. Turner-Dooley Association: Well drained, moderately deep and deep soils with dark colored, sandy loam surface layers and sandy clay loam subsoils over loose sand and gravel and loose sands at 20- to 40-inch depths. They occur on nearly level to gently sloping upland terraces.
8. Dooley-Williams-Hillon Association: Well drained deep soils with dark colored, loamy surface layers and sandy clay loam and clay loam subsoils and calcareous, clay loam soils less than 14 inches deep to partly weathered, clay loam glacial till on nearly level to slightly rolling uplands.

AREAS DOMINATED BY SILTY SOILS SHALLOW AND MODERATELY DEEP OVER SILTY SHALE BEDROCK

9. Morton-Cabba Association: Well drained soils with dark colored, silt loam surface layers and silty clay loam subsoils underlain by silty shale between 20 and 40 inches and light colored, calcareous, silt loam soils less than 20 inches deep to silty shale on the rolling shale uplands.

AREAS DOMINATED BY STRATIFIED SILTY, SANDY AND CLAYEY SOILS

10. Havrelon-Frazier-Wet Saline Soils Association: Poorly and very poorly drained soils with light and dark colored, calcareous, silt loam and clayey surface layers and silt loam and clayey subsoils with varying degrees of stratification, wetness and salinity. They occur on the strongly dissected flood plains of the Poplar River and its tributaries.

AREAS DOMINATED BY SOILS ON VERY STEEP, ROUGH UPLANDS

11. Scroggin-Riverside-Hillon Association: Well drained, light colored, silty, gravelly and clayey soils 14 to 40 inches deep to underlying silty shales, gravels or glacial till on very steep, dissected uplands.
12. Cabba-Hillon-Rock Land Association: Well drained, calcareous, silt loam and clay loam soils less than 20 inches deep to silty shale or clay loam glacial till and barren shale outcrops on very steep slopes of rough land called "breaks."

SOILS LEGEND

AREAS DOMINATED BY SOILS WITH LOAM AND CLAY LOAM SURFACES AND CLAY LOAM SUBSOILS.

1. Williams Association: Deep, well drained soils, 14 to 24 inches deep to lime, with dark loamy surfaces and clay loam subsoils on nearly level to strongly sloping, glacial till uplands.
2. Williams-Hillon Association: Well drained, deep, dark colored soils with loamy surfaces and clay loam subsoils and light colored, calcareous, clay loam soils less than 14 inches deep to partly weathered, clay loam glacial till. They occur on nearly level to strongly undulating, glacial till uplands.
3. Hillon-Bowbells Association: Well drained, light colored, calcareous, loam and clay loam soils less than 14 inches deep to partly weathered, clay loam glacial till and dark colored soils with thick surface layers and clay loam subsoils more than 40 inches deep on moderately steep and steep complex slopes of glacial till uplands.
4. Farnuf-Williams-Hillon Association: Well drained, deep, dark colored soils with loam surface layers and clay loam subsoils and calcareous, clay loam soils less than 14 inches deep over partly weathered glacial till. This association occurs on moderately sloping glacial till and on terraces and fans.
5. Farnuf-Farland-Savage Association: Well drained, deep, dark, colored soils with loam to silty clay surface layers and clay loam and silty clay subsoils with moderate salinity in poorly drained areas. These soils are found on level to gently sloping fans and terraces.

AREAS DOMINATED BY SOILS WITH SANDY LOAM TO SAND SURFACES AND SANDY CLAY LOAM TO SAND SUBSOILS

6. Dooley-Parshall-Lihen Association: Well drained, deep soils with dark colored, sandy loam and loamy sand surface layers and sandy clay loam to loamy sand subsoils on nearly level to strongly undulating uplands.

7. Turner-Dooley Association: Well drained, moderately deep and deep soils with dark colored, sandy loam surface layers and loose sands at 20 to 40 inch depths. They occur on nearly level to gently sloping upland terraces.
8. Dooley-Williams-Hillon Association: Well drained deep soils with dark colored, loamy surface layers and sandy clay loam and clay loam subsoils and calcareous, clay loam soils less than 14 inches deep to partly weathered, clay loam glacial till on nearly level to slightly rolling uplands.

AREAS DOMINATED BY SILTY SOILS SHALLOW AND MODERATELY DEEP OVER SILTY SHALE BEDROCK

9. Morton-Cabba Association: Well drained soils with dark colored, silt loam surface layers and silty clay loam subsoils underlain by silty shale between 20 and 40 inches and light colored, calcareous, silt loam soils less than 20 inches deep to silty shale on the rolling shale uplands.

AREAS DOMINATED BY STRATIFIED SILTY, SANDY AND CLAYEY SOILS

10. Havreton-Frazer-Wet Saline Soils Association: Poorly and very poorly drained soils with light and dark colored, calcareous, silt loam and clayey surface layers and silt loam and clayey subsoils with varying degrees of stratification, wetness and salinity. They occur on the strongly dissected flood plains of the Poplar River and its tributaries.

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11. Scroggin-Riverside-Hillon Association: Well drained, light colored, silty, gravelly and clayey soils 14 to 40 inches deep to underlying silty shales, gravels or glacial till on very steep, dissected uplands.
12. Cabba-Hillon-Rock Land Association: Well drained, calcareous, silt loam and clay loam soils less than 20 inches deep to silty shale or clay loam glacial till and barren shale outcrops on very steep slopes of rough land called "breaks."

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